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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

TRAN, BINH X

ART UNIT	PAPER NUMBER
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1765

DATE MAILED: 10/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/799,590

Applicant(s)

KOBAYASHI, YASUO

Examiner

Binh X. Tran

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 14, 15 and 17-21 is/are rejected.
- 7) ☒ Claim(s) 16-17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/655,787.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3/15/04; 9/15/05 *9/15/05*
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claim 17 is objected to because of the following informalities: In line 2 of claim 17, the term "if" (in the phrase "the cleaning gas if fluorine-containing gas") appears to be a typo-error for --is--. Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 14-15, 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaneko et al. (US 5,326,406) in view of Satou et al. (US 5,961,850).

Respect to claim 14, Kaneko discloses a method for surface treatment comprising the steps of:

supplying a cleaning gas (i.e. ClF_3) to an object to be processed (i.e. semiconductor wafer) (Fig 1, col. 6 lines 1-5);

heating the object to activating the cleaning gas on the surface of the object so as to remove oxide formed on the object surface (col. 6, col. 7 lines 46-60, col. 9 lines 18-25);

subjecting the object to a reducing gas (i.e. hydrogen) activated by plasma to remove substance derived from the cleaning gas still remaining on the surface of the object (col. 6 lines 42-49).

Kaneko fails to disclose that cooling the object so as to make cleaning gas adhere to a surface of the object. However, Kaneko clearly discloses that the object is not heated during the step of supplying the cleaning gas (col. 9 lines 10-16). In a plasma treatment process, Satou teaches to control the temperature of the object by using the coolant to cool the object so that the reaction products are adhere to the cooled portion (Fig 1, col. 5 lines 33-40). It would have been obvious to one having ordinary skill in the art, at the time of invention, to modify Kaneko in view of Satou by cooling the object because this prevent the reaction products from adhere to the inner sidewall of the processing chamber (col. 3 lines 50-52).

Respect to claim 15, Satou teaches the object (13) mounted on a mount is cooled by cooling the mount (11) (Fig 1). Respect to claims 17-18, Kaneko teaches the cleaning gas is ClF_3 (read on "fluorine-containing gas" and "chlorine-containing gas") Respect to claim 19, Kaneko teaches to reducing as is hydrogen gas (Fig 1, col. 6 lines 43-46). Respect to claim 20, Satou discloses the temperature of the surface of the object is -200°C to 100°C (col. 3, read on applicant's range).

Respect to claim 21, Kaneko further discloses the step of emitting ultraviolet rays to activate cleaning gas so as to remove oxide formed on the surface of the object (col. 6 line 8-31).

Allowable Subject Matter

4. Claim 16 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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5. The following is a statement of reasons for the indication of allowable subject matter: The cited prior arts fail to disclose or suggest the step of heating the object wherein the object is positioned apart from the mount. Both Kaneko and Satou teach to heat the object position on the mount.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Binh X. Tran whose telephone number is (571) 272-1469. The examiner can normally be reached on Monday-Thursday and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Binh Tran

Binh X. Tran